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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,917	09/29/2000	Norikazu Mizuno	81877.0007	1895

7590 12/20/2001

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EXAMINER

GUERRERO, MARIA F

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 12/20/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant N

09/670,917

Applicant(s)

MIZUNO ET AL.

Examiner

Maria Guerrero

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This Office Action is the first action on the merits.

Claims 1-9 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claims 5-7 are objected to because of the following informalities: claim 5 recites "has **such** a thickness"; claim 6 recites "to **such** an extent"; claim 7 recites the expression "or higher". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 3-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 recites "predetermined times". Claims 4 recites "predetermined thickness". The expression "predetermined" rendered the claims indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Mori et al. (JP 06-080962) (Translation).

Mori et al. teaches an apparatus comprising a reaction container (Translation, claims).

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (JP 06-080962) (Translation) in view of Moore et al. (U.S. 6,251,802).

Mori et al. teaches forming a silicon nitride film on a reaction container, removing silicon nitride film by introducing NF_3 gas. Mori et al. teaches the silicon nitride film is deposited by CVD using silane and NH_3 . Mori et al. discloses the pressure ranging from several Torr to normal pressure (Translation).

Mori et al. fails to show forming the silicon nitride film with bis tertiary butyl amino silane and NH_3 . However, Moore et al. shows forming a silicon nitride layer with bis tertiary butyl amino silane and NH_3 by chemical vapor deposition (col. 5, lines 25-35, col. 7, lines 3-15).

Mori et al. does not specifically show the reaction container being made of quartz. However, this is well known in the art.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Mori et al.'s process by including the use of bis tertiary butyl amino silane as taught Moore et al. The modification would eliminate buildup of the silicon nitride layer on internal chamber parts and would produce less global warming gas effluents.

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8. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Langan et al. (U.S. 5,413,670) in view of Moore et al. (U.S. 6,251,802).

Langan et al. teaches forming a silicon nitride film on a reaction container, removing silicon nitride film from a CVD reactor by introducing NF_3 gas (Abstract, col. 4, lines 3-10).

Langan et al. fails to show forming the silicon nitride film with bis tertiary butyl amino silane and NH_3 . However, Moore et al. shows forming a silicon nitride layer with bis tertiary butyl amino silane and NH_3 by chemical vapor deposition (col. 5, lines 25-35, col. 7, lines 3-15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Langan et al.'s process by including the use of bis tertiary butyl amino silane as taught Moore et al. The modification would eliminate buildup of the silicon nitride layer on internal chamber parts and would produce less global warming gas effluents.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Foster (U.S. 4,720,395) discloses a thermal CVD process for forming Si_3N_4 . Hines et al. "Reducing Perfluorinated Compound Emissions " and Ino et al. "Plasma Enhanced In Situ Chamber Cleaning Evaluated by Extracted-Plasma-Parameter Analysis" teach using NF_3 to clean chemical vapor deposition chambers. Qiao et al. (U.S. 5,976,900) shows the use of quartz in the reaction container as well

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known in the art (col. 8, lines 10-15). Xia et al. (U.S. 6,255,222) teaches a method for removing residue from substrate processing chamber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 703-305-0162.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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December 10, 2001


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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